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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,904	05/06/2002	Victor John Yannacone, Jr.	3305-012184	1012
7590 Randall A Notzen 700 Koppers Building 436 Seventh Avenue Pittsburgh, PA 15219-1818				
EXAMINER LAMPRECHT, JOEL				
ART UNIT		PAPER NUMBER		
3737				
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09/15/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/019,904

**Applicant(s)**

YANNAKONE, JR. ET AL.

**Examiner**

JOEL M. LAMPRECHT

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12, 14, 16, 21 and 25-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14, 16, 21 and 25-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/26/09 has been entered.

### ***Response to Amendment***

The affidavit filed on 6/26/09 under 37 CFR 1.131 is sufficient to overcome the Parker et al reference.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an

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invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-12, 14, 16, 21, and 25-30 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-21 of U.S. Patent No. 7,408,156 B2. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the '156 patent disclose substantially the same scope of invention of the instant application when the fundamental theorem of calculus is taken into account.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a

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later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-7, 10, 12, 14, 16, 21, 25-27, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walsall et al (US 4,428,382) in view of Liu et al (US 6,023,637). Walsall et al discloses a method and apparatus for IR imaging data frame acquisition over an interval so as to map IR radiation data acquired by the imager over multiple frames to detect abnormalities in the tissue being interrogated. Normalization of temperature ranges (Col 9 Line 5-Col 11 Line 65), acquisition occurs over multiple time intervals with data acquisition occurring during both a static and stressed state (Col 5 Line 40-Col 6 Line 35, Col 6 Line 40-Col 7 Line 35). Data is manipulated to show the change in temperature over a time period (Col 9 Line 5-Col 10 Line 35) and data points are used and plotted to show variations in temperature which indicate pathological abnormalities.

Walsall et al do not disclose the use of a mirror, markers, variable acquisition methods based on sensor acquisition, or image construction from image data. Attention is then directed to the secondary reference to Liu et al.

Liu et al. also discloses a method and apparatus for thermal imaging and additionally discloses that the intensity is adjusted to compensate for variance in base levels of intensity of thermal radiation from patient to patient (Col 13, lines 9-12), which would advantageously provide the ability to compare data and images between patients. Liu et al further discloses alternatives available for the

sensor, such as a single point infrared sensor or either a linear or two-dimensional array of sensors. The use of an array of sensors provides a reduction in sampling time, as multiple optels are acquired at substantially the same time as opposed to using a single point sensor where radiation is measured sequentially from each optel (Col 10, lines 29-46). A scanner mirror (fig. 11, element 130) is used to focus radiation obtained from the patient to the detection system. The system may produce three-dimensional images (Col 11, line 43) which are normalized to intensity mappings (Fig 14). This system may be used in the detection of tumors, which is an abnormal growth of tissue or a neoplastic disease process. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Walsall et al in light of the teachings of the reference by Liu et al to include simultaneous detection of an array as well as a mirror to allow sampling of portions of the patient not in the field of view of the detector system without moving the entire detector system to a new field of view, which would both reduce sampling time.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walsall et al in view of Liu et al and in further view of Webber (US 6,081,577). Walsall et al, as discussed above, substantially discloses the invention as claimed, however fails to explicitly disclose the use of a marker on the patient. Webber discloses a three-dimensional imaging system that may be practiced using infrared light (Col 2, line 59). Additionally, Webber discloses the use of fiducial markers which may be held in a fixed position relative to a

selected object, such as a patient, or may be directly attached to the object (Col 7, lines 32-35). In order for a fiducial marker to be seen in an image it must have emissivity different than that of the patient. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Walsall et al in view of Liu et al in light of the teachings in the reference by Webber to include fiducial markers in order to aid in a variety of image processing techniques well known in the art, such as registration, three-dimensional reconstruction, or determination of location of a tumor.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walsall et al in view of Liu et al as applied to claim 10 above, and further in view of Nelson, et al (US 6216540). Walsall et al in view of Liu et al, as discussed above, substantially discloses the invention as claimed, however fails to disclose the use of a grid. Nelson et al also discloses a system and method for thermal imaging of an object and further discloses the use of a grid. Nelson et al teaches that image quality may be improved through the use of a collimation grid (Abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Walsall et al in view of Liu et al further in light of the teachings of Nelson et al to include a grid to provide improved image quality.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walsall et al in view of Liu et al (US 6,023,637) as applied to claim 25 and in further view of Parker et al (US 5,533,139). Walsall et al in view of Liu et al, as discussed above, substantially discloses the invention as claimed, however fails

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to disclose logarithmic image acquisition. Parker et al also discloses an imaging system and additionally discloses the use of real time logarithmic image acquisition (Col 3, lines 5-8). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Walsall et al in light of the teachings of Parker et al in view of Liu et al to include logarithmic image acquisition to reduce overall image storage requirements while still obtaining the most data at the beginning where the largest changes in temperature are occurring.

Claims 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walsall et al in view of Liu et al as applied to claim 25 above and in further view of Gordon, et al (US 5,692,510). Walsall et al in view of Liu et al, as discussed above, substantially discloses the invention as claimed, however fails to disclose the use of synchronized acquisition. Gordon et al also discloses a thermal imaging system and further discloses that the end-diastolic images were selected to be stored by the system based on a triggering system synchronized by an ECG R-wave (Col 6, lines 29-34). The stored frames, therefore, were separated by at least one frame of data that was not stored, such as those images acquired during systole. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Walsall et al in view of Liu et al in light of the teachings of Gordon et al to use synchronized data acquisition to, as Gordon states, reduce motion artifacts.

***Response to Arguments***



Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection. With regard to the outstanding argument against Liu et al, namely that Liu et al discloses in Col 11 Line 15-65 that multi-image comparison is useful, and that comparative measurements of abnormalities can be made from such data. Regarding the argument against Nelson et al, collimators are disclosed for input devices (Col 19 Line 35-Col 20 Line 40), and the Parker et al patent is of course related in the art as logarithmic acquisition and data organization are not dependent on the wavelength of the imager, but rather on the algorithm used to logarithmically classify intensity points or received data points.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL M. LAMPRECHT whose telephone number is (571)272-3250. The examiner can normally be reached on 8:30-5:00 Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/  
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JML